

AMENDMENTS TO THE CLAIMS

Amend the claims as set forth in the following listing. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently amended) A method of streaming media data, the method comprising:

by transmitting a plurality of data packets as a data packet stream over a network from a source server to a client device, the client device comprising a source decoder and a pre-decoder buffer;

removing protocol headers from a data packet received at the client device to retrieve media data;

~~for buffering the media data temporarily prior to decoding into an uncompressed data format in the source decoder of the client device, the method comprising~~

buffering the media data in the pre-decoder buffer of the client device in accordance with a buffering algorithm; and

operating the source server to verify that the data packet stream transmitted from the source server to the client device complies with the buffering algorithm, behavior of the buffering algorithm being affected by a pre-decoder initial buffering time and a minimum pre-decoder buffer size, the minimum pre-decoder buffer size corresponding to a minimum size of the

pre-decoder buffer required to provide substantially correct playback of the media data at the client device ~~when the data packet stream is transmitted over a constant delay reliable transmission network.~~

2. (Previously presented) The method of claim 1, comprising submitting a request from the client device to the source server to set at least one of the pre-decoder initial buffering time and the pre-decoder buffer size.

3. (Previously presented) The method of claim 1, comprising defining a default pre-decoder initial buffering time and a default minimum pre-decoder buffer size.

4. (Previously presented) The method of claim 3, comprising signaling at least one of the default pre-decoder initial buffering time and the default minimum pre-decoder buffer size from the client device to the source server.

5. (Previously presented) The method of claim 1, comprising adjusting the pre-decoder initial buffering time in the client device responsive to an indication of a required pre-decoder initial buffering time received from the source server.

6. (Previously presented) The method of claim 1, comprising adjusting the pre-decoder buffer size in the client device responsive to an indication of a required pre-decoder buffer size received from the source server.

7. (Previously presented) The method of claim 1, comprising providing the source server with a plurality of pre-encoded media streams representative of the same media content and signaling the client device to indicate at least one of a pre-decoder initial buffering time and a pre-decoder buffer size required in the client to ensure correct playback of each available pre-encoded media stream.

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Previously presented) The method of claim 1, comprising adjusting at least one of the pre-decoder initial buffering time and the pre-decoder buffer size in the client device responsive to a change in required pre-decoder buffer parameters signaled by the source server during a streaming session.

12. (Cancelled)

13. (Previously presented) The method of claim 1, comprising adjusting the transmission times of data packets from the source server to the client device in order to

ensure that the transmitted data packet stream does not exceed the buffering capabilities of the pre-decoder buffer in the client device.

14. (Cancelled)

15. (Previously presented) The method of claim 1, comprising implementing a post-decoder buffer in the client device to absorb decoding-related delay variations.

16. (Cancelled)

17. (Previously presented) The method of claim 1, wherein the media data is transmitted to a wireless client device and the network comprises a wireless network, the wireless network being selected from a group comprising: a GPRS (General Packet Radio Service) wireless network and a UMTS (Universal Mobile Telecommunications System).

18. (Currently amended) A system for streaming media data by transmitting a plurality of data packets containing the media data as a data packet stream, the system comprising:

a source server hosting the media data;

a network serving as a transmission medium for the data packets containing the media data; and

a client device capable of playing back media data recovered from the data packets, the client device comprising:

a source decoder; and

a pre-decoder buffer coupled to the source decoder for buffering the media data temporarily prior to decoding into an uncompressed data format in the source decoder;

wherein the client device is arranged to remove protocol headers from a data packet received at the client device to retrieve media data and to buffer the media data in the pre-decoder buffer in accordance with a buffering algorithm and the source server is arranged to verify that the data packet stream transmitted from the source server to the client device complies with the buffering algorithm, behavior of the buffering algorithm being affected by a pre-decoder initial buffering time and a minimum pre-decoder buffer size, the minimum pre-decoder buffer size corresponding to a minimum size ~~of the pre-decoder~~ of the pre-decoder buffer required to provide substantially correct playback of the media data at the client device ~~when the data packet stream is transmitted over a constant delay reliable transmission network.~~

19. (Previously presented) The system of claim 18, wherein the network comprises a wireless network selected from a group comprising: a GPRS (General Packet

Radio Service) wireless network and a UMTS (Universal Mobile Telecommunications System).

20. (Previously presented) The system of claim 19, wherein the client device is a wireless terminal compatible for data packet use by the wireless system.

21. (Cancelled)

22. (Currently amended) A client device for receiving streaming media data, the media data being received at the client device in a plurality of data packets transmitted as a data packet stream over a network from a source server, the client device comprising:

a source decoder; and

a pre-decoder buffer coupled to the source decoder for buffering the media data temporarily prior to decoding into an uncompressed data format in the source decoder;

wherein the client device is arranged to remove protocol headers from a data packet received at the client device to retrieve media data and to buffer the media in the pre-decoder buffer in accordance with a buffering algorithm and the source server is arranged to verify that the data packet stream transmitted from the source server to the client device complies with the buffering algorithm, behavior of the buffering algorithm being affected by a pre-decoder initial buffering time and a

minimum pre-decoder buffer size, the minimum pre-decoder buffer size corresponding to a minimum size of the pre-decoder buffer required to provide substantially correct playback of the media data at the client device ~~when the data packet stream is transmitted over a constant delay reliable transmission network.~~

23. (Previously presented) The client device of claim 22, selected from a group comprising: a wireless terminal, a desktop computer, a laptop computer and a set-top box.

24. (Previously presented) A method according to claim 1, further comprising:

- sending signaling from the client device to the source server to indicate at least one of a pre-decoder initial buffering time and a minimum pre-decoder buffer size; and
- operating the server to verify the transmitted data packet stream according to the buffering algorithm, using the signaled pre-decoder initial buffering time and / or minimum pre-decoder buffer size.

25. (Previously presented) A method according to claim 3, wherein the default pre-decoder initial buffering time and default minimum pre-decoder buffer size are defined implicitly.

26. (Previously presented) A method according to claim 25, comprising sending signaling from the client device to the source server to indicate the client device's pre-decoder buffering capabilities to the source server if these are superior to those defined by said default values.

27. (Previously presented) A method according to claim 1, wherein the source server retrieves pre-decoder buffering capabilities for the client device from a capability server.

28. (Previously presented) A method according to claim 1, wherein the source server adjusts the way in which the media data is encoded and packetized in order to ensure that the transmitted data packet stream does not exceed the buffering capabilities of the pre-decoder buffer in the client device.

29. (Previously presented) A method according to claim 1, wherein the client device is one of the following: a wireless terminal, a desktop computer, a laptop computer or a set-top box.

30. (Previously presented) A system according to claim 18, wherein the client device is further arranged to send signaling to the source server to indicate at least one of a pre-decoder initial buffering time and a minimum pre-decoder buffer size and the source server is further arranged to verify the transmitted data packet stream according to

the buffering algorithm, using the signaled pre-decoder initial buffering time and / or minimum pre-decoder buffer size.

31. (Previously presented) A system according to claim 18, wherein a default pre-decoder initial buffering time and a default minimum pre-decoder buffer size are defined for the pre-decoder buffer of the client device and the source server is arranged to verify the transmitted data packet stream according to the buffering algorithm using said default values.

32. (Previously presented) A system according to claim 31, wherein the client device is arranged to signal at least one of the default pre-decoder initial buffering time and the default minimum pre-decoder buffer size to the source server in connection with setting up a streaming session with the source server.

33. (Previously presented) A system according to claim 31, wherein the default pre-decoder initial buffering time and default minimum pre-decoder buffer size are defined implicitly.

34. (Previously presented) A system according to claim 33, wherein the client device is arranged to signal its pre-decoder buffering capabilities to the source server if these are superior to those defined by said default values.

35. (Previously presented) A system according to claim 18, wherein the source server is arranged to retrieve pre-decoder buffering capabilities for the client device from a capability server.

36. (Previously presented) A system according to claim 18, wherein the client device is arranged to adjust its pre-decoder initial buffering time responsive to an indication of a required pre-decoder initial buffering time received from the source server.

37. (Previously presented) A system according to claim 18, wherein the client device is arranged to adjust its pre-decoder buffer size responsive to an indication of a required pre-decoder buffer size received from the source server.

38. (Previously presented) A system according to claim 18, wherein the source server is provided with a plurality of different pre-encoded media streams representative of the same media content, and is arranged to signal at least one of a pre-decoder initial buffering time and a pre-decoder buffer size required in the client device to ensure correct play-back of each available pre-encoded media stream.

39. (Previously presented) A system according to claim 18, wherein the client device is arranged to adjust at least one of its pre-decoder initial buffering time and its

pre-decoder buffer size responsive to a change in required pre-decoder buffer parameters signaled by the source server during a streaming session.

40. (Previously presented) A system according to claim 18, wherein the source server is arranged to adjust the transmission times of data packets from the source server to the client device in order to ensure that the transmitted data packet stream does not exceed the buffering capabilities of the pre-decoder buffer in the client device.

41. (Previously presented) A system according to claim 18, wherein the source server is arranged to adjust the way in which the media data is encoded and packetized in order to ensure that the transmitted data packet stream does not exceed the buffering capabilities of the pre-decoder buffer in the client device.

42. (Previously presented) A system according to claim 18, wherein the client device is one of the following: a wireless terminal, a desktop computer, a laptop computer or a set-top box.

43. (Previously presented) A client device according to claim 22, wherein the client device is arranged to send signaling to the source server to indicate at least one of a pre-decoder initial buffering time and a minimum pre-decoder buffer size for use by the source server to verify the transmitted data packet stream according to the buffering algorithm.

44. (Previously presented) A client device according to claim 22, wherein a default pre-decoder initial buffering time and a default minimum pre-decoder buffer size are defined for the pre-decoder buffer of the client device.

45. (Previously presented) A client device according to claim 44, wherein the client device is arranged to signal at least one of the default pre-decoder initial buffering time and the default minimum pre-decoder buffer size to the source server in connection with setting up a streaming session with the server.

46. (Previously presented) A client device according to claim 44, wherein the client device is arranged to signal its pre-decoder buffering capabilities to the source server if these are superior to those defined by said default values.

47. (Previously presented) A client device according to claim 22, wherein the client device is arranged to adjust its pre-decoder initial buffering time responsive to an indication of a required pre-decoder initial buffering time received from the source server.

48. (Previously presented) A client device according to claim 22, wherein the client device is arranged to adjust its pre-decoder buffer size responsive to an indication of a required pre-decoder buffer size received from the source server.

49. (Previously presented) A client device according to claim 22, wherein the client device is arranged to:

- receive signaling from the source server indicative of at least one of a pre-decoder initial buffering time and a pre-decoder buffer size required to provide correct play-back of each of a number of different pre-encoded media streams representative of the same media content;
- select one of the different pre-encoded media streams for playback at the client device; and
- adjust its pre-decoder initial buffering time and pre-decoder buffer size according to the requirements of the selected media stream.

50. (Previously presented) A client device according to claim 22, wherein the client device is arranged to adjust at least one of its pre-decoder initial buffering time and its pre-decoder buffer size responsive to a change in required pre-decoder buffer parameters signaled by the source server during a streaming session.

51. (Currently amended) A server for streaming media data by transmitting a plurality of data packets as a data packet stream to a client device, the data packets formed by adding protocol headers to media data, the client device comprising a source decoder and a pre-decoder buffer for buffering the media data temporarily before decoding into an uncompressed data format in the source decoder of the client device, wherein the server is arranged to verify that the data packet stream transmitted from the

server to the client device complies with a buffering algorithm used in the client device to buffer the media data in the pre-decoder buffer, behavior of the buffering algorithm being affected by a pre-decoder initial buffering time and a minimum pre-decoder buffer size, the minimum pre-decoder buffer size corresponding to a minimum size of the pre-decoder buffer required to provide substantially correct playback of the media data at the client device ~~when the data packet stream is transmitted over a constant delay reliable transmission network.~~

52. (Previously presented) A server according to claim 51, wherein the server is further arranged to receive signaling from the client device indicative of at least one of a pre-decoder initial buffering time and a minimum pre-decoder buffer size and to verify the transmitted data packet stream according to the buffering algorithm using the signaled pre-decoder initial buffering time and / or minimum pre-decoder buffer size.

53. (Previously presented) A server according to claim 51, wherein a default pre-decoder initial buffering time and a default minimum pre-decoder buffer size are defined for the pre-decoder buffer of the client device and the server is arranged to verify the transmitted data packet stream according to the buffering algorithm using said default values.

54. (Previously presented) A server according to claim 53, wherein the server is arranged to receive signaling indicative of at least one of a default pre-decoder initial

buffering time and a default minimum pre-decoder buffer size in connection with setting up a streaming session.

55. (Previously presented) A server according to claim 53, wherein the default pre-decoder initial buffering time and default minimum pre-decoder buffer size are defined implicitly.

56. (Previously presented) A server according to claim 51, wherein the server is arranged to retrieve pre-decoder buffering capabilities for the client device from a capability server.

57. (Previously presented) A server according to claim 51, wherein the server is arranged to provide an indication of a required pre-decoder initial buffering time to the client device.

58. (Previously presented) A server according to claim 51, wherein the server is arranged to provide an indication of a required pre-decoder buffer size to the client device.

59. (Previously presented) A server according to claim 51, wherein the server is provided with a plurality of different pre-encoded media streams representative of the same media content, and is arranged to signal at least one of a pre-decoder initial

buffering time and a pre-decoder buffer size required in the client device to ensure correct play-back of each available pre-encoded media stream.

60. (Previously presented) A server according to claim 51, wherein the server is arranged to signal a change in required pre-decoder buffer parameters to the client device during a streaming session.

61. (Previously presented) A server according to claim 51, wherein the server is arranged to adjust the transmission times of data packets from the server to the client device in order to ensure that the transmitted data packet stream does not exceed the buffering capabilities of the pre-decoder buffer in the client device.

62. (Previously presented) A server according to claim 51, wherein the server is arranged to adjust the way in which the media data is encoded and packetised in order to ensure that the transmitted data packet stream does not exceed the buffering capabilities of the pre-decoder buffer in the client device.

63. (Currently amended) A method for buffering media data in a client device, the media data being received at a client device as a data packet stream from a server, the client device comprising a pre-decoder buffer for buffering the media data temporarily before decoding into an uncompressed data format, wherein the method comprises removing protocol headers from a data packet received at the client device to retrieve

media data; and buffering the media data in the pre-decoder buffer of the client device in accordance with a buffering algorithm, behavior of the buffering algorithm being affected by a pre-decoder initial buffering time and a minimum pre-decoder buffer size, the minimum pre-decoder buffer size corresponding to a minimum size of the pre-decoder buffer required to provide substantially correct playback of the media data at the client device~~when the data packet stream is transmitted over a constant delay reliable transmission network.~~

64. (Previously presented) A method according to claim 63, further comprising sending signaling from the client device to the server to indicate at least one of an pre-decoder initial buffering time and a minimum pre-decoder buffer size for use by the server to verify the transmitted data packet stream according to the buffering algorithm.

65. (Previously presented) A method according to claim 63, further comprising defining a default pre-decoder initial buffering time and a default minimum pre-decoder buffer size for the pre-decoder buffer of the client device.

66. (Previously presented) A method according to claim 65, wherein the client device signals at least one of the default pre-decoder initial buffering time and the default minimum pre-decoder buffer size to the server in connection with setting up a streaming session with the server.

67. (Previously presented) A method according to claim 65, wherein the client device signals its pre-decoder buffering capabilities to the server if these are superior to those defined by said default values.

68. (Previously presented) A method according to claim 63, wherein the client device adjusts its pre-decoder initial buffering time responsive to an indication of a required pre-decoder initial buffering time received from the server.

69. (Previously presented) A method according to claim 63, wherein the client device adjusts its pre-decoder buffer size responsive to an indication of a required pre-decoder buffer size received from the server.

70. (Previously presented) A method according to claim 63, further comprising:

- receiving at the client device signaling from the server indicative of at least one of a pre-decoder initial buffering time and a pre-decoder buffer size required to provide correct play-back of each of a number of different pre-encoded media streams representative of the same media content;
- selecting one of the different pre-encoded media streams for playback at the client device; and

- adjusting the pre-decoder initial buffering time and pre-decoder buffer size of the pre-decoder buffer according to the requirements of the selected media stream.

71. (Previously presented) A method according to claim 63, wherein the client device adjusts at least one of its pre-decoder initial buffering time and its pre-decoder buffer size responsive to a change in required pre-decoder buffer parameters signaled by the server during a streaming session.

72. (Currently amended) A method for transmitting media data as a data packet stream from a server to a client device, the client device comprising a pre-decoder buffer for buffering the media data temporarily before decoding into an uncompressed data format, wherein the method comprises adding protocol headers to media data to form a data packet stream and operating the server to verify that the data packet stream transmitted from the server to the client device complies with a buffering algorithm used in the client device to buffer the media data in the pre-decoder buffer, behavior of the buffering algorithm being affected by a pre-decoder initial buffering time and a minimum pre-decoder buffer size, the minimum pre-decoder buffer size corresponding to a minimum size of the pre-decoder buffer required to provide substantially correct playback of the media data at the client device ~~when the data packet stream is transmitted over a constant delay reliable transmission network.~~

73. (Previously presented) A method according to claim 72, wherein the server receives signaling from the client device indicative of either one or both of a pre-decoder initial buffering time and a minimum pre-decoder buffer size and verifies the transmitted data packet stream according to the buffering algorithm using the signaled pre-decoder initial buffering time and / or minimum pre-decoder buffer size.

74. (Previously presented) A method according to claim 72, wherein a default pre-decoder initial buffering time and a default minimum pre-decoder buffer size are defined for the pre-decoder buffer of the client device and the server verifies the transmitted data packet stream according to the buffering algorithm using said default values.

75. (Previously presented) A method according to claim 74, wherein the server receives signaling indicative of at least one of a default pre-decoder initial buffering time and a default minimum pre-decoder buffer size in connection with setting up a streaming session.

76. (Previously presented) A method according to claim 74, wherein the default pre-decoder initial buffering time and default minimum pre-decoder buffer size are defined implicitly.

77. (Previously presented) A method according to claim 72, wherein the server retrieves pre-decoder buffering capabilities for the client device from a capability server.

78. (Previously presented) A method according to claim 72, wherein the server provides an indication of a required pre-decoder initial buffering time to the client device.

79. (Previously presented) A method according to claim 72, wherein the server provides an indication of a required pre-decoder buffer size to the client device.

80. (Previously presented) A method according to claim 72, wherein the server is provided with a plurality of different pre-encoded media streams representative of the same media content and signals at least one of a pre-decoder initial buffering time and a pre-decoder buffer size required in the client device to ensure correct play-back of each available pre-encoded media stream.

81. (Previously presented) A method according to claim 72, wherein the server signals a change in required pre-decoder buffer parameters to the client device during a streaming session.

82. (Previously presented) A method according to claim 72, wherein the server adjusts the transmission times of data packets from the server to the client device in order to ensure that the transmitted data packet stream does not exceed the buffering capabilities of the pre-decoder buffer in the client device.

83. (Previously presented) A method according to claim 72, wherein the server adjusts the way in which the media data is encoded and packetized in order to ensure that the transmitted data packet stream does not exceed the buffering capabilities of the pre-decoder buffer in the client device.

84. (Cancelled)